

AMENDMENTS TO THE CLAIMS

1. (Original) A method for making a component, said method comprising:

providing a single-piece sacrificial die, said die comprising at least one internal cavity;

introducing a ceramic slurry into said at least one cavity of said die, said slurry comprising a ceramic and a carrier fluid;

curing said slurry to form a ceramic casting core;

removing said sacrificial die by exposing said die to an environment adapted to destroy said die while leaving said ceramic casting core intact; and

performing an investment casting process using said ceramic casting core as part of a mold-core assembly to form said component.

2. (Original) The method of claim 1, wherein providing said single-piece sacrificial die comprises producing said die by at least one additive layer manufacturing process.

3. (Original) The method of claim 2, wherein said additive layer manufacturing process comprises stereolithography.

4. (Original) The method of claim 2, wherein said additive layer manufacturing process comprises at least one of micro-pen deposition, selective laser sintering, and laser wire deposition.

5. (Original) The method of claim 1, wherein said die comprises at least one sacrificial material selected from the group consisting of an epoxy, a silicone, and a metal.

6. (Original) The method of claim 1, wherein said ceramic slurry comprises at least one of alumina, yttria, ceria, zirconia, magnesia, and calcia.

7. (Original) The method of claim 1, wherein said component comprises an external wall and at least one internal wall disposed in a spaced-apart relationship with said external wall.

8. (Original) The method of claim 1, wherein introducing said slurry comprises operating an injection molding apparatus to introduce said slurry into said cavity of said die.

9. (Original) The method of claim 1, wherein curing comprises heating said slurry to evaporate said carrier fluid.

10. (Original) The method of claim 1, wherein removing said die comprises heating said die.

11. (Original) The method of claim 1, wherein removing said die comprises dissolving said die in a solvent.

12. (Original) The method of claim 1, wherein removing said die comprises chemically removing said die.

13. (Original) The method of claim 1, wherein said component is a component of a turbine assembly.

14. (Original) The method of claim 13, wherein said component comprises one of a vane and a blade.

15. (Original) The method of claim 14, wherein said component comprises an external wall and at least one internal wall disposed in a spaced-apart relationship with said external wall.

16. (Original) The method of claim 14, wherein said component comprises at least one internal cooling passage.

17. (Original) The method of claim 16, wherein said at least one passage further comprises turbulators.

18. (Original) A method for making a component for a turbine assembly, said method comprising:

using a stereolithography process to provide a single-piece sacrificial die, said die comprising at least one internal cavity;

introducing a ceramic slurry into said at least one cavity of said die, said slurry comprising a ceramic and a carrier fluid;

curing said slurry to form a ceramic casting core;

removing said sacrificial die by exposing said die to an environment adapted to destroy said die while leaving said ceramic casting core intact; and

performing an investment casting process using said ceramic casting core as part of a mold-core assembly to form said component;

wherein said component comprises an external wall and at least one internal wall disposed in a spaced-apart relationship with said external wall, and further comprises at least one cooling passage disposed between said external wall and said internal wall.

19. (Original) A method for making a casting core, comprising:

manufacturing a single-piece sacrificial die using an additive layer manufacturing method, said die comprising at least one internal cavity;

introducing a ceramic slurry into said cavity of said die, said slurry comprising a ceramic and a carrier fluid;

curing said slurry to form a ceramic casting core; and

removing said sacrificial die by exposing said die to an environment adapted to destroy said die while leaving said ceramic casting core intact.

20. (Original) The method of claim 19, wherein said additive layer manufacturing process comprises stereolithography.

21. (Original) The method of claim 19, wherein said additive layer manufacturing process comprises at least one of micro-pen deposition, selective laser sintering, and laser wire deposition.

22. (Original) The method of claim 19, wherein said die comprises at least one sacrificial material selected from the group consisting of an epoxy, a silicone, and a metal.

23. (Original) The method of claim 19, wherein introducing said slurry comprises operating an injection molding apparatus to introduce said slurry into said cavity of said die.

24. (Original) The method of claim 19, wherein removing said die comprises at least one of heating said die, dissolving said die in a solvent, and chemically removing said die.

25. (Original) The method of claim 19, wherein said core is configured to form internal passages in an investment cast article.

26. (Original) The method of claim 25, wherein said article comprises an external wall and at least one internal wall disposed in a spaced-apart relationship with said external wall, and further comprises at least one cooling passage disposed between said external wall and said internal wall.

27. (Original) The method of claim 25, wherein said article is a component of a turbine assembly.

28. (Original) A casting core manufactured by the method of claim 19.

29. (Currently Amended) A die for making a casting core, comprising:

a single piece structure comprising at least one cavity, said cavity configured to correspond to a desired configuration of at least one internal cooling circuit of a gas turbine component;

wherein said structure comprises a material capable of being selectively removed from a ceramic casting core when said ceramic casting core is disposed in said at least one cavity.

30. (Original) The die of claim 29, wherein said structure comprises a structure assembled in an additive layer manufacturing process.

31. (Original) The die of claim 30, wherein said additive layer manufacturing process comprises stereolithography.

32. (Original) The die of claim 30, wherein said material comprises at least one sacrificial material selected from the group consisting of an epoxy, a silicone, and a metal.